Remarks/Arguments

In the Drawings

The Examiner has objected to the drawings under 37 CFR 1.83(a) as not showing every feature of the invention specified in the claims, specifically identifying "a planar antenna," "a substrate," "a short-circuit plane," and "a line/slot coupling." Examiner also objected to the drawings under 37 CFR 1.84(p)(4) due to use of the reference character 1 for both "slot" and "access" and the use of reference character 2 for both "access" and "substrate."

References for the first "access" have been changed to **1'** in the amended figure 1 and the amended specification. References for the second "access" have been changed to **2'** in the amended figure 1 and the amended specification.

Applicant notes that the phrase "line/slot coupling," objected to by Examiner, has been replaced with "line/slot transition" in the amended claims. The slot is labeled '1' in figure 1. The feed line is labeled '3.' The "line/slot transition" is therefore represented in figure 1 where the representation of the slot 1 crosses the representation of the feed line 3. The phrase "short circuit plane," objected to by Examiner, has been removed from the amended claims.

Regarding Examiner's objection regarding representation of "a planar antenna," Applicant respectfully notes that the specification on page 3, lines 28-30, states, "As shown in figure 1, the planar antenna is constituted by an annular slot 1 realised on a substrate 2 by engraving on a ground plane that is not shown." As such, Applicant believes that "a planar antenna" is shown in amended figure 1 based upon the representations of the substrate and the annular slot from which the planar antenna is formed in the amended figure.

In view of the above remarks and amendments to the drawings, specification, and claims, it is respectfully submitted that there is no longer a basis for objection to the drawings under 37 CFR 1.83(a) or 37 CFR 1.84(p)(4). Thus, it is further respectfully submitted that this objection has been satisfied and should be withdrawn.

Claim Objections

Examiner objected to claims 1, 2-4 and 7-8 based upon informalities.

Claim 1 has been modified in accordance with Examiner's suggestion, adding "p is the perimeter of the slot" in line 5. Applicant respectfully submits that Examiner's suggested change regarding claim 2 is rendered unnecessary given the amendments made to claim 1.

Claims 7 and 8 have been modified to clarify correspondence of the specified slot with the slot of the parent claim.

35 U.S.C. §112, ¶ 2

The Examiner has objected to claims 1-9 under 35 USC 112 as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Examiner specifically notes uncertainty regarding the meaning of the phrase "short-circuit plane" in claim 1, "line/slot coupling" in claims 1 and 3, "the line" in claim 2, and "tangential line/slot transition" in claim 4.

Applicant notes that the phrase "short circuit plane," objected to by Examiner, has been removed from amended claim 1. The phrase "line/slot coupling," objected to by Examiner, has been replaced with "line/slot transition" in the amended claims 1 and 3. Furthermore, Applicant notes that the relation of the line and slot is described on page 4, lines 4-6 of the specification. The phrase "the line," objected to by Examiner, has been changed to "each feed line" in the amended claim 2.

In view of the above remarks and amendments to the claims, it is respectfully submitted that there is no longer a basis for a 35 USC 112 objection to claims 1-9. Thus, it is further respectfully submitted that this objection has been satisfied and should be withdrawn.

35 U.S.C. §103

Claims 1-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over US 5,892,487 – Fujimoto et al.

The present claimed invention, in one embodiment, provides a planar antenna with diversity of radiation. The antenna is a slot antenna with a specific perimeter. To obtain the diversity of radiation, the slot is fed with two feed lines, one having a transition with the slot in a zone forming an open circuit (Oc), the other having a transition with the slot in a zone forming a short circuit (Sc) (see figure 1). The specific positions for the feed lines associated with a specific diameter provide the radiation diversity (see page 4 – second and third paragraph).

It is submitted that Fujimoto et al. neither teach nor discusses "a first feed-line coupled in zone of the slot forming an open circuit and a second feed-line placed at a distance $d = (2n+1)\ \lambda s/4$ from said first line, where n is an integer greater than or equal to zero, said second feed line being coupled in a zone of the slot forming a short-circuit" as described in amended claim 1.

Fujimoto et al. describe a "feeder for a microwave antenna system which can be integrated together with electronic circuitry on a common circuit board. A slot antenna, preferably shaped as an annular slot, is provided on the circuit board, and can be etched on the backside of the circuit board, which is normally a ground plate. The antenna system can be used for reception of DBS signals." (Fujimoto et al. Abstract)

The Office Action admits that Fujimoto et al. do not disclose the perimeter of the slot being selected such that $P=k\ \lambda s$. Similarly, the Office Action admits that Fujimoto et al. do not disclose the shape of the slot being rectangular.

The Office Action asserts that Fujimoto et al. describe a planar antenna forming on a substrate comprising a slot of closed shape dimensioned to operate at a given frequency of at least one feed-line placed in an open circuit zone of the slot and a second feed-line placed at a distance $d = (2n+1)\lambda s/4$ from the first line, wherein n is an integer greater than or equal to zero.

Applicant respectfully disagrees with Examiner that Fujimoto shows a second feed-line placed at a distance $d = (2n+1)\lambda s/4$ from the first line. The feed lines of Fujimoto are not positioned in accordance with the claims of the present invention. Fujimoto relates to a slot antenna with two feed lines. However, as mentioned by Fujimoto in column 2 – lines 35 and following, the first microstrip line 17 receives signal with a first polarization (i.e. horizontal) and the second microstrip line 18 receives signal with a second polarization (i.e. vertical). The dimensions and the shapes of the stub extending the microstrip lines 17 and

18 are optimized to achieve a wide frequency bandwidth. Fujimoto discloses a 90 degree separation between the two feed lines, which is an even multiple of 45 degrees. In contrast, in the present amended claim 1, the multiplier of 2n+1 will necessarily be an odd number for integer values of n, which when multiplied by "λs/4", the result is an odd integer multiple of 45 degrees of spacing.

Therefore, it is respectfully submitted that Fujimoto et al. do not disclose or suggest a system wherein "a first feed-line coupled in zone of the slot forming an open circuit and a second feed-line placed at a distance d = (2n+1) λs/4 from said first line, where n is an integer greater than or equal to zero, said second feed line being coupled in a zone of the slot forming a short-circuit" as described in amended claim 1.

In view of the above remarks and amendments to the claims, it is respectfully submitted that there is no 35 USC 112 enabling disclosure provided by Fujimoto et al. that makes the present invention as claimed in claim 1 unpatentable. As claims 2-9 are dependent on independent claim 1, it is respectfully submitted that claims 2-9 are allowable for the same reasons discussed above in regards to claim 1. Thus, it is further respectfully submitted that this rejection has been satisfied and should be withdrawn.

Double Patenting

The Examiner has rejected claim 1, 4 and 6-8 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9 and 11 of U.S. Patent No. 7,027,001 B2.

Applicant will file a terminal disclaimer under 37 CFR 1.321to overcome this rejection.

Having fully addressed the Examiner's rejections it is believed that, in view of the preceding amendments and remarks, this application stands in condition for allowance. Accordingly then, reconsideration and allowance are respectfully solicited. If, however, the Examiner is of the opinion that such action cannot be taken, the Examiner is invited to contact the applicant's representative at (609) 734-6804, so that a mutually convenient date and time for a telephonic interview may be scheduled.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,

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Patent Operations
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Internal Docket No. PF030121

ANNOTATED SHEET SHOWING CHANGES

1/7

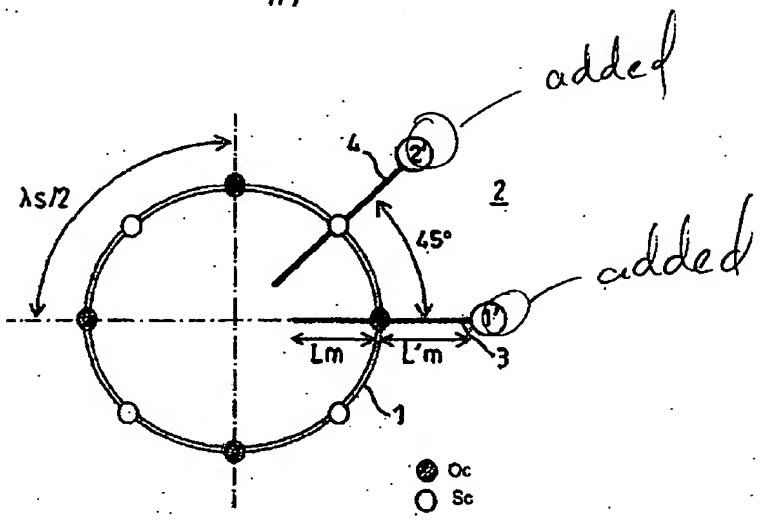

FIG.1

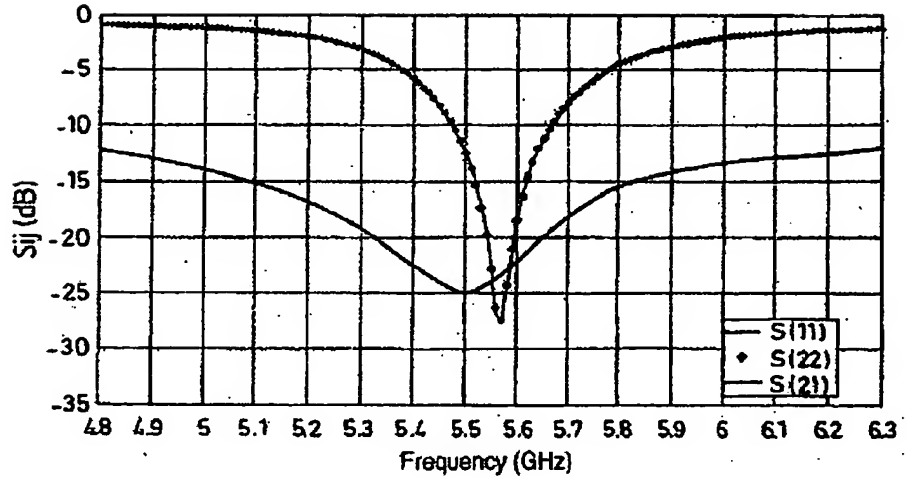

FIG.2